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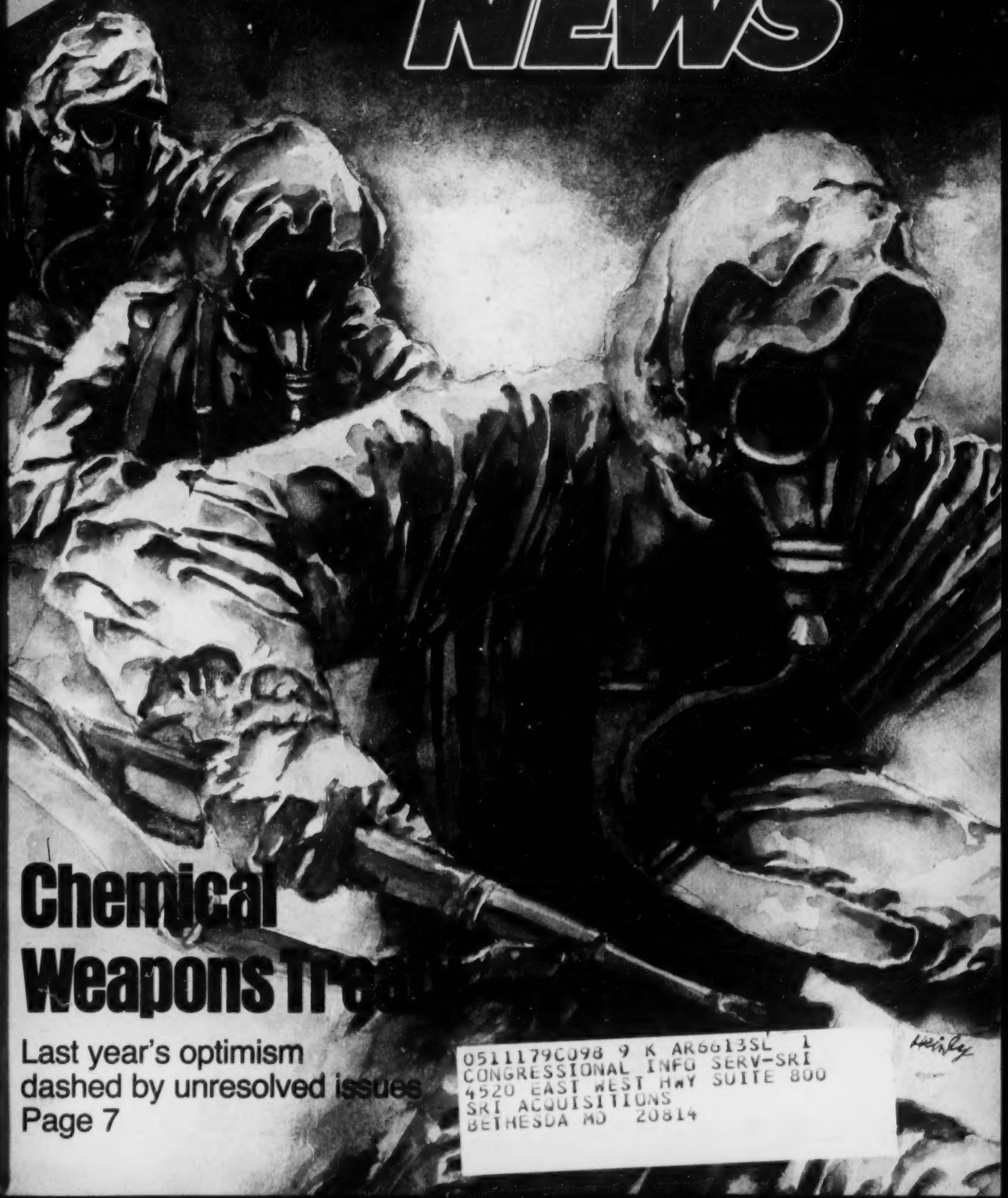
MARCH 28, 1988

FINAL PROGRAM
3rd Chemical Congress of North America, Toronto Page 39

CHEMICAL & ENGINEERING

NEWS



Chemical Weapons Tre

Last year's optimism dashed by unresolved issues
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NEWS

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MARCH 28, 1988

News of the Week

■ **In the face of a likely reduction in fiscal year 1989 Superconducting Super Collider funding to a fraction of that requested, project backers are fighting for Congressional support.** **Page 4**

■ **The Federal Trade Commission has ordered B. F. Goodrich to sell a vinyl chloride plant the company purchased from Diamond Shamrock five years ago.** **Page 5**

■ **Scientists report no evidence of an increase in birth defects in children born in the Seveso, Italy, area following a 1976 dioxin accident.** **Page 5**

■ **Shell and American Cyanamid will unite major parts of their catalyst businesses in a 50-50 joint venture called Criterion Catalyst Co.** **Page 6**

■ **The House of Representatives has approved budget ceilings that could result in fiscal 1989 funding increases for NSF, NASA, and Department of Energy science programs.** **Page 6**

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Business

Some biotechnology companies began to record profits in fourth-quarter 1987, as more products came to market. **Page 21**

DSM of the Netherlands, Finland's Kemira plan to exchange fertilizer operations, another move in the ongoing restructuring of Europe's troubled fertilizer industry. **Page 22**

Government

Concerns about pollution control are rising as efforts to amend the Clean Air Act are well under way and major metropolitan areas face August deadline to meet air quality standards. **Page 24**

A number of science and technology projects are on President Reagan's list of wasteful-spending items in the fiscal 1988 budget. **Page 26**

Science

AIDS research progresses quietly, advancing scientists' understanding of the disease, raising hopes for ways to treat it and prevent it. **Page 29**

ACS News

Science exhibit at Smithsonian Institution, scheduled to open in 1992, will be funded from society's fund-raising drive. **Page 34**

Final Program

Program for 3rd Chemical Congress of North America and 195th ACS National Meeting in Toronto includes listing of general events, technical papers, registration form. **Page 39**

News Focus

After nearly a decade of negotiations on a treaty that would ban development, production, and stockpiling of chemical weapons, diplomats at the Conference on Disarmament in Geneva anticipate continued slow but steady progress in the next couple of years. **Page 7**

Chemical & Engineering News

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LETTERS

CHEMICAL SAFETY

Explosive diazide compound

SIR: The purpose of this letter is to alert the chemical community to the unpredictable explosive properties of trans-1,2-cyclopropanedicarbonyl diazide. We have had the experience of preparing this compound several times (0.02 to 0.5 mole) without mishap. However, on the last occasion, 0.25 mole of the material detonated violently while at room temperature in toluene (100 to 150 mL) immediately after a Teflon-coated magnetic stirring bar was slid into the 1-L flask containing the solution. Personal injury resulted.

The literature procedure being followed (with the modification of using 150 mL instead of 400 mL of toluene) was that for *cis*-1,2-cyclopropanedicarbonyl diazide [Majchvzak, M. W., Kotelko, A., Guryn, R., *Synthetic Communications*, **11**, 493 (1981)], which keeps the diazide in toluene solution at all times, and is unlike other procedures for the trans compound that isolate it as the neat oil [for example, Witiak, D. T., Lee, H. J., Hart, R. W., Gibson, R. E., *J. Med. Chem.*, **20**, 630 (1977)].

It is unknown what initiated the explosion. The cause may have been the shock caused by the Teflon-coated magnetic stir bar being placed into the flask or possibly iron fillings that may have adventitiously been on the stir bar. We hope that others will take note of the extreme explosive hazard inherent in this compound.

Robert E. Johnson
Sterling Winthrop Research Institute
Rensselaer, N.Y.

Catalyst for learning

SIR: David C. Finster in his letter (C&EN, Dec. 21, 1987, page 3) brought out a very important point in his statement, "The rate-determining step in education is not teaching, but learning." In 30 years of teaching I never was able to cover the textbook completely, and in recent years I was covering less than I did 20 years ago (of course the books have gotten larger also). There are suggestions that we need to add things such as polymers, material science, computer literacy, and business to the curriculum in order to turn out well-rounded graduates. I can agree that all of these things would be worthwhile, but the question is how to do it.

To add these other areas on top of the present curriculum requirements is ludicrous. The present students can't or perhaps don't want to learn anything additional. It would require adding another year to the degree, and, considering the attitude of the present-day student, we would have very few chemistry majors. Until the attitude of the public and the students is changed and the importance of a good education is appreciated, asking the students to take more courses and learn more will accomplish little.

I have no good answers to the problem. I must agree with Finster that shoving more information at the student is not going to change the rate-determining step. It will simply give the instructor more material to ask questions about, but the student will not be able to answer them, since additional learning did not take place. What we need is a catalyst that will change the mechanism of our teaching-learning process and allow for additional learning to occur. I doubt that additional science courses will be the catalyst.

Paul R. Wunz Jr.
Retired

Littering space

SIR: Alan Rhodes (C&EN, Feb. 15, page 2) cites Jacques Cousteau as pointing out that the Strategic Defense Initiative tests are littering space with so many thousands of small high-velocity fragments that "if we do not take action, this waste will become an almost impenetrable shield which could prevent, perhaps for a thousand years, our access to space."

But how marvelous! Even if SDI proves impractical, just working on it will put up "an almost impenetrable shield," which of course would wreck intercontinental missiles as easily as it wrecks spaceships.

Still, I would like to see Cousteau's calculations on how many fragments stay in orbit (rather than escape to outer space or burn up in re-entry), how thick they would be in the vast volume of near-Earth space, and what are the resultant changes of collision. I suspect he may be off by a few orders of magnitude.

George W. Price
Chicago

Correction

• Feb. 1, page 15: El Paso Products uses its own proprietary polypropylene technology at its Bayport, Tex., plant; it does not license Union Carbide's process.

Revenues Up Sharply at Biotechnology Companies

With more products coming to market and consequent rising revenues for many firms, some began to show profits in fourth quarter

Food & Drug Administration and Environmental Protection Agency approvals are beginning to have an effect on the fortunes of biotechnology companies. Some of them were able to introduce new products last year and others have products that they expect to begin marketing this year.

As the companies move into commercialization, revenues—especially from product sales—are increasing, and some of the firms are beginning to be profitable. Indeed, Genentech, the industry leader, has proven so successful that it has been able to receive listing on the New York Stock Exchange, a goal to which most smaller companies aspire and an indication that the capitalization of the company is fairly secure.

The result is that combined revenues from 19 biotechnology companies sampled by C&EN moved up 69% in the fourth quarter of 1987 from the similar period a year earlier to a combined total of $168 million. And as a composite, the group registered a profit; combined earnings amounted to $290,000, compared with a loss of more than $31 million in the fourth quarter of 1986.

For the year as a whole, the group recorded revenues of about $516 million, up 41% from 1986. The group's operating loss totaled $20 million, far better than the $67 million loss in 1986.

Much of the improved results in the fourth quarter can be attributed to Genentech, which launched its Activase tissue plasminogen activator, used to reduce blood clots, during that period. Also, the company says, sales increased for its Protropin human growth hormone.

The South San Francisco, Calif.-based company is not underplaying the importance of its results. Robert A. Swanson, Genentech chief executive officer, says, "With the ap-

Fourth-quarter revenues rose for 12 biotechnology companies

	FOURTH-QUARTER 1987						FULL-YEAR 1987					
	Revenues[a] ($ millions)	Earnings[b]	Change from 1986 Revenues	Change from 1986 Earnings	Profit margin[c] 1987	Profit margin[c] 1986	Revenues[a] ($ millions)	Earnings[b]	Change from 1986 Revenues	Change from 1986 Earnings	Profit margin[c] 1987	Profit margin[c] 1986
Amgen	$13.553	$ 0.322	52%	def	2.4%	def	$ 49.378	$ 1.523	40%	283%	3.1%	1.1%
Biogen	2.936	−3.391	48	def	def	def	12.508	−22.602	21	def	def	def
Calgene	2.657	−0.902	37	def	def	def	23.406	−0.641	114	def	def	def
California Biotechnology	2.700	−3.400	−39	def	def	def	11.675	−8.500	−31	def	def	def
Cetus	15.937	−3.633	26	def	def	def	55.065	−9.223	16	def	def	def
Collagen	6.136	−0.688	3	def	def	7.3%	23.871	0.033	2	−99	0.1	9.4
Cytogen	2.486	−2.339	27	def	def	def	11.423	−4.193	154	def	def	def
DNA Plant Technology	1.725	−0.388	−5	def	def	0.8	7.138	−1.048	8	def	def	1.3
Ecogen	1.276	−0.438	8	def	def	5.9	4.283	−4.889	37	def	def	def
Genentech	96.477	27.200	163	750	28.2	8.7	230.543	42.200	72	385	18.3	6.5
Genetics Institute	4.424	−4.113	−28	def	def	def	19.600	−10.444	2	def	def	def
Immunex	4.288	−0.524	37	def	def	def	15.704	−0.175	66	def	def	def
Integrated Genetics	3.307	−1.048	−10	def	def	7.9	12.476	−2.722	23	def	def	def
Liposome	1.191	−1.245	−2	def	def	def	4.032	−6.255	15	def	def	def
Molecular Genetics	2.021	−3.164	−12	def	def	def	8.437	−3.772	−7	def	def	def
Monoclonal Antibodies	2.110	−0.440	11	def	def	def	5.872	11.205	−31	def	190.8	def
Repligen	2.000	−0.923	44	def	def	def	9.743	0.320	125	def	3.3	def
Ribi ImmunoChem	0.307	−0.598	−23	def	def	def	1.564	−1.086	−3	def	def	def
Synergen	2.696	0.002	41	def	0.1	def	9.449	−0.121	19	def	def	3.7

a Includes sales, contract research, royalty, and interest revenues. b Excludes extraordinary credits. c After-tax income as a percentage of sales. **def** = deficit.

proval of Activase and the benefits it delivers for an improved quality of life for millions of Americans, the promise of biotechnology is now a reality."

Genentech is not resting when it comes to applications of its two products. The company shipped more than $86 million of growth hormone in 1987 and $58 million of Activase. Swanson says that the company is exploring a new use for its growth hormone in adults that will be tested in clinical trials in burn victims. He adds that Activase will be tested in blood-clot-related disorders other than heart attacks, for which it has won approval.

Although Genentech is the most visible of the companies in terms of product sales, it is not the only firm selling products. At Monoclonal Antibodies, Mountain View, Calif., product revenues in fourth-quarter 1987 increased 3.2% to $1.43 million. Thomas A. Glaze, the company's president, comments: "Sales in the quarter reflected particularly strong shipments of Advance (brand) components to Ortho Pharmaceutical. We were not able to begin shipping our new OvuQuick product during the quarter as we had expected, but shipments did commence the first week of January."

At Collagen Corp., Palo Alto, Calif., product sales for the quarter declined to $5.94 million from about $5.98 million in the same period the year before. This may be due for a turnaround, however. The company says that new marketing and sales programs are beginning to show promise, such as doubling of consumer inquiries for product and physician information. Problems came from delays with new products and the costs associated with the sales and marketing plans for the products. Howard Palefsky, president and chief executive officer of the company, says that he believes that these problems will be resolved and that earnings for the company's fiscal year, which will end June 30, will approach break-even.

Besides Genentech, two other companies that were surveyed by C&EN showed profits in the fourth quarter of 1987. Amgen posted earnings of $322,000 in the quarter, up from a deficit in the same period the year before. For the full year, the company's earnings were $1.52 million, a 283% increase from the year before. And Synergen, Boulder, Colo., had tiny earnings of $1800 in the fourth quarter, compared with a $106,100 loss in the same period the year before. For the full year, however, Synergen showed a $121,400 loss.

The biotech firms are all relatively bullish, in spite of continued losses. Larry Soll, chairman and president of Synergen, says, "Synergen experienced strong growth in 1987. We significantly accelerated preclinical studies of our therapeutic products and now have the pilot production facility and organization necessary for successful human clinical testing. In the past few months, we manufactured significant quantities of our pharmaceutical products for evaluation and testing. Our first commercial product, a genetically improved strain for the production of riboflavin, is now being produced by Coors Biotech Products Co."

At Cytogen, president and chief executive officer Ronald J. Brenner, says, "Results to date with OncoScint (cancer imaging agent) in human clinical trials are very encouraging and suggest that our cancer imaging agent should improve management of the cancer patient. In 1988 we intend to expand both the breadth and scope of the clinical evaluation of Cytogen products, and thus we are forecasting a continuation of significant investment spending." He notes that 1988 will be a year of significant progress toward market introduction of Cytogen products.

William Storck, New York

DSM, Kemira to swap fertilizer operations

Restructuring of Western Europe's troubled fertilizer industry continues apace. The latest move being contemplated entails a portfolio swap between DSM of the Netherlands and Finland's Kemira. If the plan materializes, it will mark a further step in Kemira's strengthening of its role as supplier of compound fertilizers based on nitrogen, phosphorus, and potassium.

DSM, for its part, aims to concentrate on the high-nitrogen sector of the market. It will gain total ownership of an ammonia operation at Geleen, the Netherlands, in which Kemira now has a one-third share, thereby raising its captive ammonia capacity at the site to 800,000 metric tons. And by quitting the phosphate-based fertilizer business, DSM no longer would have to face the growing environmental concern over cadmium pollution (C&EN, March 14, page 8). DSM uses Moroccan phosphate rock that has a relatively high cadmium content. In contrast, rock from Kemira's own Finnish mine is extremely low in cadmium.

Through acquisition of DSM's Rotterdam operations, Kemira will gain ownership of a 220,000 metric-ton, wet-phosphoric-acid plant. It will be the company's first move into phosphoric acid production outside Finland, where it operates units at two sites with a total annual output capability of 250,000 metric tons.

In addition to phosphoric acid, DSM makes ammonium nitrate, nitric acid, and urea at Rotterdam. And its half share of a 400,000 metric-ton-per-year ammonia plant there—a joint partnership with West Germany's BASF—will be transferred to Kemira. Nearby, Kemira has its own 550,000 metric-ton-per-year ammonia plant.

The Finnish state-owned company also will gain a bigger share of the U.K. business through DSM's UKF operations at Ince, Cheshire, on England's west coast, where ammonia, nitric acid, and compound fertilizers are made. These will fit in neatly with Kemira's own fertilizer production on England's east coast. Its U.K. expansions include a 200,000 metric-ton-per-year ammonia plant now nearing completion.

During the past few years, Kemira has made a strong push out of Finland and onto the European fertilizer scene. In Belgium, it acquired Société Carbochimique with plants at three locations. In Denmark, it took a majority holding in Superfos. And in the U.K., it purchased L&K Industries.

Dermot O'Sullivan, London